

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1 (currently amended). A turntable apparatus with universal-automatic, self-adjusting chuck for holding and positioning an auto wheel, or the like, comprising:

(a) a turntable ~~means~~ having at least three radially-disposed slots therein ~~with equidistant angles therebetween;~~

(b) a hollow drive shaft, ~~means~~ one end of which is centrally secured to the ~~turning~~ turntable means for rotating the turntable ~~means~~;

(c) at least three jaws for retention of the ~~auto~~ wheel, ~~the each of the at least three jaws being movably operable within their respective positionable along at least one of the radially-disposed slots in the turntable means and each of the jaws having a threaded receptacle therein;~~

(d) a bearing means assembly having an inner race and an outer race with bearings housed therebetween, the inner race being ~~operably mounted~~ enconnected to the drive shaft means;

(e) ~~annular disk means~~ a plate having a centrally located receptacle therein and having a plate aperture centrally located within the receptacle and passing through the plate, with a annular rim thereabout having a inner diameter smaller than the other inside diameter of the receptacle, wherein the receptacle is adapted to operably receive and mount the outer race of the bearing means therein, wherein the plate aperture is adapted for at least a portion of the drive shaft to pass through the plate to the place where the drive shaft is secured to the turntable, the disk means having at least three equidistant threaded receptacles for receiving fasteners therein; whereby the disk means is and wherein the drive shaft and turntable are rotatably movable independently of the rotating movement of the drive shaft means relative to the plate;

(f) at least ~~three~~ one longitudinal ~~position control arms~~ arm for adjustably positioning the each of the at least three jaws in along at least one of the slots in the turntable, each control arm having a pair of oppositely disposed control-

arm end portions with an aperture in each end thereof one control-arm portion rotatably connected to the plate and the other control-arm portion rotatably connected to at least one jaw;

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(g) a plurality of threaded fastening means for operative pivotal engagement with each of the apertures in the arms, each of the fastening means being threadably anchored to one of the gripping means and threadably mated to one of the equidistant threaded receptacles in the annular disk whereby each of the ends of the longitudinal arms is pivotally movable thereabout;

arms mountable in each of the apertures of the arms and

(h)(g) at least one stop means located on the shaft for preventing lateral for restricting movement between the shaft means and the inner race of the bearing means assembly in at least one direction along the axis of the drive shaft;

(+)(h) at least one locking arm means for locking the disk means plate in position relative to the turntable, the locking arm means having two oppositely disposed ends a first locking-arm portion and a second locking-arm portion, one end the first locking-arm portion being fixedly mounted connected to the disk means plate with the locking arm means extending outwardly therefrom at an angle thereto in a direction that is generally away from the axis of the drive shaft, the other end having an aperture therein such that the second locking-arm portion is located farther from the axis of the drive shaft than is the first locking-arm portion;

(+)(i) a pneumatic an actuator means having a housing means and an longitudinally movable shaft means movable actuating part operably disposed within the housing means connected to the actuator, the housing means having a receptacle mounted on one end of the housing means and at the opposite end of the housing means a clevis bracket means secured to the housing means a shaft means one end of which is operably disposed within the housing means and one end of which is operably disposed outside of the housing means wherein the actuator is connected to the turntable, the shaft means adapted for extensible movement in and out of the housing means, the end of the shaft means operably disposed outside of the housing means having a clevis bracket for receiving a rod therein, the shaft means being

extensibly operable by pneumatically created forces operably delivered to the housing means and the actuating part is connected to the second locking-arm portion, with the actuating part being adapted for controllable movement of the actuating part by an energy source delivered to the actuator, and for said controllable movement of the actuating part to change the angular position of the locking arm means and thereby change the rotational position of the plate relative to the rotational position of the turntable; and,

al (k) ~~means for anchoring one end of the pneumatic housing means to the turntable means in pivotal relationship with the clevis bracket means mounted to the one end of the pneumatic housing means;~~

(l)(i) ~~means for receiving compressed air into the hollow drive shaft means and to deliver the compressed air therefrom to the pneumatic actuator means; transmitting means for delivering the energy source through the drive shaft to the actuator.~~

(m) ~~means for pivotably securing the end of the movable shaft means of the pneumatic actuator means to the aperture in the locking arm means;~~

(n) ~~at least three arm means each of which is adapted to be pivotally secured at one end thereof to one of the at least three receptacle means in the disk and the opposite end of each of the at least three arm means being adapted to be pivotally secured to the complementary gripping means; and~~

(o) ~~a spring means operably mounted between the turntable means and the annular disk means positioning arm exert a tension biasing force therebetween.~~

Claim 2 (canceled).

Claim 3 (new). The turntable apparatus of Claim 1, wherein the at least one stop means is for restricting movement of the bearing assembly in both directions along the axis of the drive shaft.

Claim 4 (new). The turntable apparatus of Claim 1, wherein the at least one locking arm means has the first locking-arm portion fixedly connected to the plate with the locking arm means extending inwardly in a direction that is generally toward the axis of the drive shaft, such that the second locking-arm portion is located nearer to the axis of the drive shaft than is

the first locking-arm portion.

Claim 5 (new). The turntable apparatus of Claim 1, wherein the locking arm means is the plate itself, with the first locking-arm portion being a first position on the plate and the second locking-arm portion being a second position on the plate.

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Claim 6 (new). The turntable apparatus of Claim 1, wherein the actuator has a housing and wherein the moveable actuating part is a movable shaft, with an enclosed end of the movable shaft operably disposed within the housing and an extended end of the movable shaft projecting out through one end of the housing, the movable shaft being movable inward and outward relative to the housing in response to forces produced as a result of the energy source being delivered to the actuator; wherein the connections of the actuator to the turntable and the moveable shaft to the second locking arm are each rotatable connections.

Claim 7 (new). The turntable apparatus of Claim 1, wherein the energy source is pneumatic or other fluid pressure; wherein the drive shaft comprises a shaft conduit running from a first part of the drive shaft to a second part of the drive shaft; wherein the transmitting means comprises the shaft conduit, a supply conduit connected at one end to a point of supply for the energy source and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

Claim 8 (new). The turntable apparatus of Claim 3, wherein the energy source is pneumatic or other fluid pressure; wherein the drive shaft comprises a shaft conduit running from a first part of the drive shaft to a second part of the drive shaft; wherein the transmitting means comprises the shaft conduit, a supply conduit connected at one end to a point of supply for the energy source and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

Claim 9 (new). The turntable apparatus of Claim 4, wherein the energy source is pneumatic or other fluid pressure; wherein the drive shaft comprises a shaft conduit running from a first part of the drive shaft to a second part of the drive shaft; wherein the transmitting means

comprises the shaft conduit, a supply conduit connected at one end to a point of supply for the energy source and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

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Claim 10 (new). The turntable apparatus of Claim 5, wherein the energy source is pneumatic or other fluid pressure; wherein the drive shaft comprises a shaft conduit running from a first part of the drive shaft to a second part of the drive shaft; wherein the transmitting means comprises the shaft conduit, a supply conduit connected at one end to a point of supply for the energy source and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

Claim 11 (new). The turntable apparatus of Claim 6, wherein the energy source is pneumatic or other fluid pressure; wherein the drive shaft comprises a shaft conduit running from a first part of the drive shaft to a second part of the drive shaft; wherein the transmitting means comprises the shaft conduit, a supply conduit connected at one end to a point of supply for the energy source and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

Claim 12 (new). The turntable apparatus of Claim 1, further comprising a tension means having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

Claim 13 (new). The turntable apparatus of Claim 3, further comprising a tension means having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

Claim 14 (new). The turntable apparatus of Claim 4, further comprising a tension means

having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

Claim 15 (new). The turntable apparatus of Claim 5, further comprising a tension means having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

Claim 16 (new). The turntable apparatus of Claim 6, further comprising a tension means having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

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Claim 17 (new). A turntable apparatus with universal, self-adjusting chuck for holding an auto wheel, or the like, comprising:

(a) a turntable having at least three radially-disposed slots therein, with said slots being substantially equidistant from one another;

(b) a hollow drive shaft, one end of which is centrally secured to the turntable for rotating the turntable, wherein the drive shaft has a shaft conduit comprising an internal hollow portion of the drive shaft that extends along the axis of the drive shaft and can serve as a conduit for a fluid to flow between a first part of the drive shaft and a second part of the drive shaft;

(c) at least three jaws arranged relative to one another and adapted for retention of a wheel by an outside edge of the wheel upon application of force by each of the jaws directed toward the wheel, each of the at least three jaws being movably positionable along at least one of the radially-disposed slots;

(d) a bearing assembly having an inner race and an outer race with bearings housed therebetween, the inner race being connected to the drive shaft;

(e) a plate having a centrally located receptacle therein and having a plate aperture centrally located within the receptacle and passing through the plate, wherein the receptacle is adapted to receive the outer race therein, wherein the plate aperture is adapted for at least a portion of the drive shaft to pass through the plate to

the place where the drive shaft is secured to the turntable, and wherein the drive shaft and turntable are rotatably movable relative to the plate;

(f) at least one control arm for adjustably positioning each of the at least three jaws along at least one of the slots, each control arm having a pair of oppositely disposed control-arm portions with one control-arm portion rotatably connected to the plate and the other control-arm portion rotatably connected to at least one jaw;

a1 (g) at least one stop means for restricting movement of the bearing assembly in at least one direction along the axis of the drive shaft;

(h) at least one locking arm means for locking the plate in position relative to the turntable, the locking arm means having a first locking-arm portion and a second locking-arm portion, the first locking-arm portion being fixedly connected to the plate with the locking arm means extending outwardly in a direction that is generally away from the axis of the drive shaft, such that the second locking-arm portion is located farther from the axis of the drive shaft than is the first locking-arm portion;

(i) an actuator having a housing and a movable shaft, with the movable shaft comprising a housed portion and an extended portion, the housed portion being disposed within the housing and the extended portion extending outwardly from the housing, wherein the movable shaft is movable inwardly and outwardly relative to the housing and the relative proportions of the movable shaft that constitute the housed portion and the extended portion vary accordingly;

(k) wherein the housing is rotatably connected to the turntable and the movable shaft is rotatably connected to the second locking-arm portion; wherein the movable shaft is adapted for controllable movement in response to one or more forces that result from delivery of fluid pressure to the housing and for thereby moving the second locking-arm portion relative to the turntable; wherein the locking arm means is adapted for rotating the plate relative to the turntable in response to movement of the second locking-arm portion relative to the table; and, wherein each of the control arms is adapted for movement of at least one of the jaws along at least one slot in response to the plate rotating relative to the turntable; and wherein at least part of the one or

more forces is transmitted from the actuator means to each of the jaws via a set of connected parts comprising at least one of the control arms, the plate, the locking arm means, and the movable shaft; and,

(j) transmitting means for delivering the fluid pressure through the drive shaft to the actuator, said transmitting means comprising the shaft conduit, a supply conduit connected at one end to a point of supply for the fluid pressure and at the other end to the first part of the shaft conduit, and an actuator conduit connected at one end to the second part of the shaft conduit and at the other end to the actuator; and, wherein the connection between the supply conduit and the first part of the shaft conduit is via a rotatable connector.

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Claim ~~18~~¹⁷ (new). The turntable apparatus of Claim ~~17~~¹⁷, further comprising a tension means having at least two ends, with one tension-means end connected to the turntable and another tension-means end connected to the locking arm means, providing tension between said connected tension-means ends.

Claim ~~18~~¹⁸ (new). The turntable apparatus of Claim ~~18~~¹⁷, wherein the tension means is a spring.

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